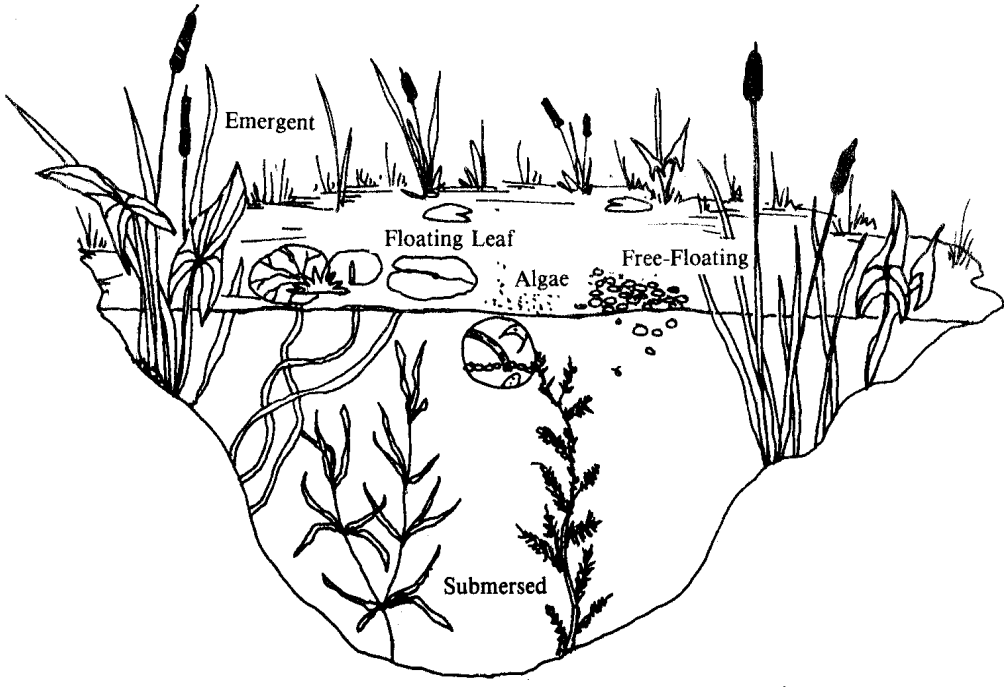
AQUAGUIDE

MISSOURI DEPARTMENT OF CONSERVATION

Cattail and Water Primrose Control in Missouri Lakes and Ponds



Aquatic plants are a necessary part of Missouri lakes and ponds. Without them most other organisms cannot survive. Plants keep the water oxygenated, provide food, cover and nesting sites, and stabilize the shoreline and bottom.

Several types of emergent plants are found in Missouri waters (see diagram). Refer to our March 1993 publication entitled, "Nuisance Aquatic Plants in Missouri Ponds and Lakes" for more information on the identification of aquatic vegetation, and the benefits and drawbacks of having aquatic plants in your pond.

Emergent plants are rooted in the bottom and extend above the surface. Cattails and water primrose are common examples of emergent plants that in some situations reach nuisance levels. Cattails may "ring" your pond and prevent anglers from casting from the shoreline. Primrose may cover the surface and entangle fishing lures. Dense growth of primrose may provide too much protection for small bluegills and make it difficult for bass to obtain enough food for good growth. Bluegill also grow slowly in this environment due to excessive populations created by overly successful reproduction.

Because of the difficulty of controlling established stands of cattails and primrose, the lake owner should not allow them to gain a foothold. If posssible Construction plans for new ponds should include a 3:1 slope along the shoreline. This will usually discourage the development of cattail and water primrose populations. If this is not possible then diligent efforts to remove all sprouts of these two plants in new waters will save money and hours of effort later.

MECHANICAL CONTROL

CUTTING cattails with a sickle bar mower or a hand held "weed eater" provides temporary control, but the plants will still spread by rhizomes or seeds. If the cutting

effort is continued and plants are never allowed to grow more than a foot tall, seeds will not be produced and eventually the plant will die as the stored food in the roots and rhizomes is depleted.

SHADING is an effective temporary measure for initial control. Black mylar (8 millimeter thickness) plastic stretched over patches of growth and fastened in place with weights will virtually destroy existing plant growths. Float the plastic on the surface and anchor it with concrete blocks. Be sure to puncture the sheet in a number of places to allow gasses to escape.

Unfortunately, the plants will return from seeds and rhizomes requiring repeated or different treatment. Shading is, however, an excellent method of getting a nuisance population under control in preparation for other treatments

WEEDING and PULLING can be done by hand or with a rake to control small infestations. Both are effective temporary controls for water primrose. However, cattails must be pulled by hand or loosened with a potato fork and pulled. Constant weeding will be necessary for both species. If weeding is done faithfully, eventually the available seeds will be eliminated and the need for constant pondowner attention will diminish. **Aquatic vegetation makes good compost!**

DEEPENING POND EDGES with a backhoe can limit the amount of shallow water available for aquatic vegetation growth. A three-to-one slope to four feet of depth should be created. A long-armed backhoe can be used to remove large populations of cattails (their roots, rhizomes and seeds) as well as creating the proper slope to control future regrowth. Weeding, as described in the previous paragraph, will be necessary to control new growth.

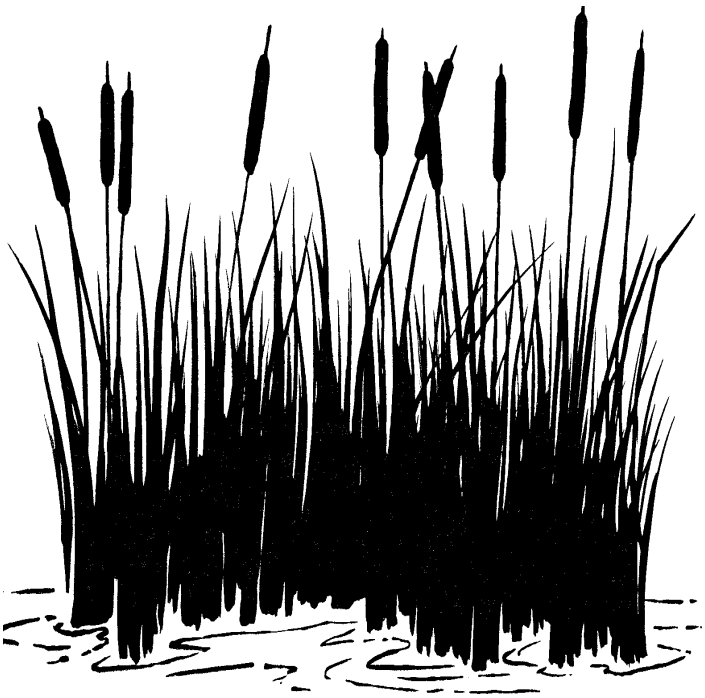
If the pond is old and has become shallow, due to accumulation of black muck on the bottom, it may be necessary to drain, dry and deepen the pond. The black muck is a storehouse of nutrients that fuel the excessive growth of aquatic plants. All excavated material should be removed from the pond's watershed so that unwanted seeds, nutrients and sediment do not wash back into the pond.

MINIMIZING NUTRIENT INPUTS -- Excess nutrients (nitrogen and phosphorus) should not be allowed to wash into lakes and ponds. Aquatic plants can grow to nuisance levels in a short time if given the extra nutrients for growing. Sources of nutrients may include droppings from excess waterfowl, run-off from feed lots, fertilized fields or yards, and septic tank seepage. These nutrients will also accumulate naturally as the pond gets older.

Establishing and maintaining a 100 foot or wider buffer strip of grass and trees around the pond's edge will help filter excess nutrients from runoff water. The construction of small silt retention ponds in the watershed will help settle out nutrients before they enter the pond. Localized nutrient inputs from feedlots or other sources may be avoided by tiling, or constructing a water diversion terrace below the nutrient source to direct its runoff away from the pond. Fencing livestock from the pond's edge and watering them from a tank below the dam is also a helpful protective measure. The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) office for your area can provide information on these and other practices.

BIOLOGICAL CONTROL

Grass carp are generally not effective at controlling cattails, water primrose and other emergent plants.



CHEMICAL CONTROL

Directions, Restrictions and Warnings

Always Read the Product Label for Directions, Current Restrictions and Warnings.

Before using chemicals, you should consider potential contamination of domestic water supplies and the waiting periods for watering livestock, eating fish, swimming and irrigation. Aquatic plant control with chemicals works best when the water temperature is above 60 degrees Farenheit. Chemical control can be very expensive and it isn't permanent, re-treatment will be neccessary and continuous. Please remember that the long-term effects of most herbicides on the environment are not well known.

Currently Recommended herbicides for cattail and water primrose control and their suggested retail price. Though these chemicals have been tested by MDC and have proven reliable other chemicals may be suitable for aquatic weed control.

	Rodeo	**Weedtrine-D**	**Reward**
Cattail (Typha spp.)	effective	effective	effective
Water Primrose (Ludwigia peploides)	effective	not recommended	not recommended
Minimum Quantity Available	1 quart	1 gallon	1 quart
Price per unit	$69.00	$57.50	$122.70

When applying chemicals to control water primrose, **treat no more than 1/3 of your pond at a time**. This may be done in two week intervals. **If the water temperature is above 80 degrees Farenheit avoid treatment at all.** Violating these conditions may result in a fish kill as decomposing vegetation uses the available oxygen.

Local farm supply stores often carry, or will order, these herbicides. For alternate sources of chemicals, a copy of the product label or clarification of this Aquaguide, contact your Regional Fisheries office or visit the MDC web-site at www.conservation.state.mo.us. Other Aquaguides on aquatic weed control are also available.

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Determination of Acre-Feet to Calculate Total Amount of Herbicide Needed

If the acreage of the area to be treated is known, the number of acre-feet can be determined by multiplying the number of acres by the average depth (average depth = 1/3 of the maximum depth). For example: A two acre pond is to be treated and has an average depth of three feet. The volume of the water is six acre-feet.

2 acres x 3 feet (average depth) = 6 acre-feet

If the dosage of herbicide recommended is 2 gallons of herbicide per acre-foot, the total herbicide needed would be twelve gallons.

6 acre-feet x 2 gal/acre-foot = 12 gallons (total herbicide needed)

If the number of acres is not known, it can be estimated by measuring the number of square feet and dividing by 43,560. The number of square feet in many cases can be closely approximated by multiplying the average width in feet by the average length in feet. For example: A shoreline area is to be treated. The weeded area is 500 feet long and averages 10 feet wide. The total surface area is 5,000 square feet or 0.115 acres.

$$10 \text{ feet} \times 500 \text{ feet} = 5{,}000 \text{ square feet}$$

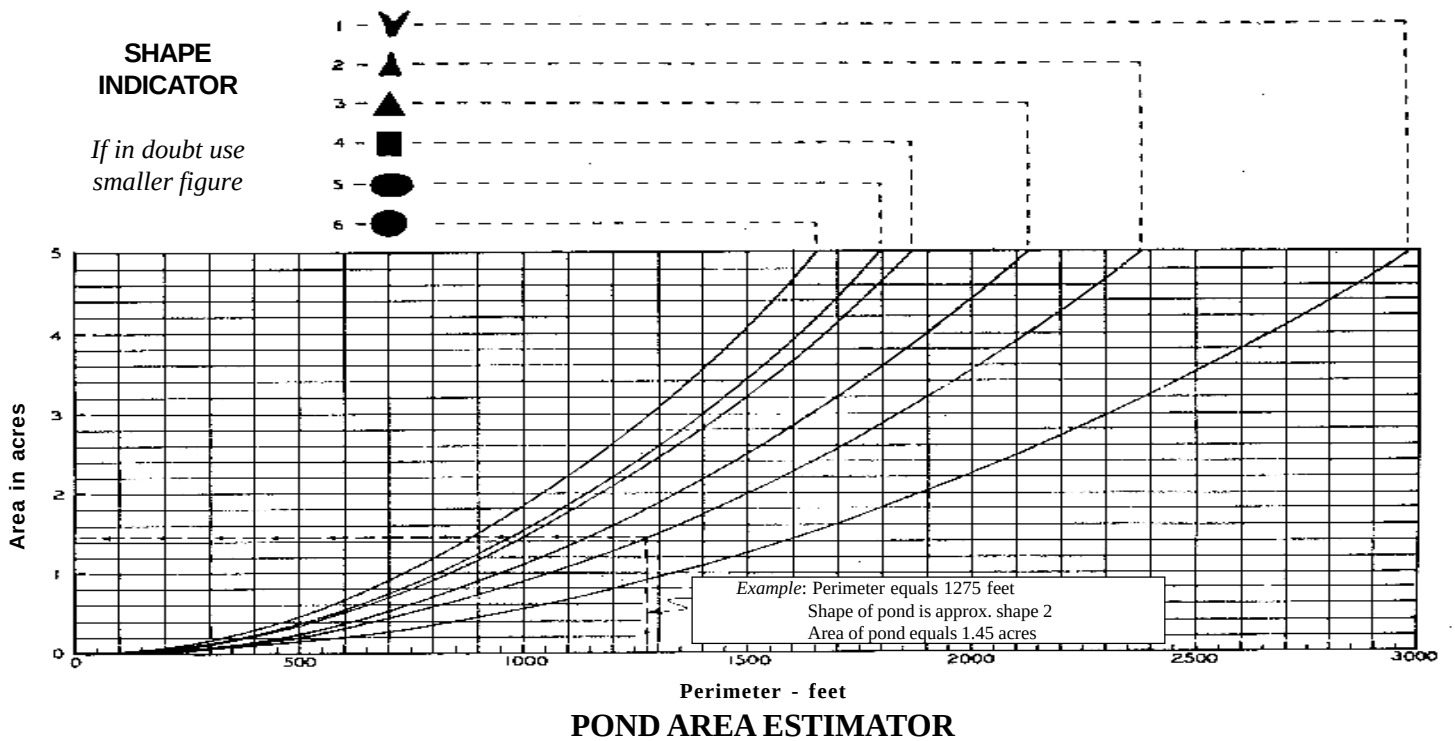
$$\frac{5{,}000 \text{ square feet}}{43{,}560 \text{ (square feet in an acre)}} = 0.115 \text{ acres}$$

The average depth of water in this shoreline area is 1 foot. The total acre-feet is 0.115.

0.115 acres x 1 foot (average depth) = 0.115 acre-feet

If we assume that 4 gal/acre-foot was the recommended dosage, then 0.46 gallons of herbicide would be needed.

4 gal/acre-foot x 0.115 (acre feet) = 0.46 gallons (total herbicide needed)



POND AREA ESTIMATOR